



# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

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**MBA PROFESSIONAL REPORT**

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## **PRICE ANALYSIS ON COMMERCIAL ITEM PURCHASES WITHIN THE DEPARTMENT OF THE NAVY**

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**By: Paul E. Fox**  
**June 2014**

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**PRICE ANALYSIS ON COMMERCIAL ITEM PURCHASES  
WITHIN THE DEPARTMENT OF THE NAVY**

Paul E. Fox, Lieutenant Commander, United States Navy

Submitted in partial fulfillment of the requirements for the degree of

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June 2014**

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# **PRICE ANALYSIS ON COMMERCIAL ITEM PURCHASES WITHIN THE DEPARTMENT OF THE NAVY**

## **ABSTRACT**

The objective of this project is to research current pricing memorandums and determine if the use of price analysis techniques and pricing memorandums can improve acquisition-pricing outcomes. The purpose of the research is to explore the efficacy of the government's current documentation of price analysis information. The intent is to diagnose what price analysis techniques are being utilized and documented in the contracting file, and to explore potential improvements. This analysis is based on a review of a sample size of 30 contract files and a personnel survey at a Navy contracting office.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

|           |  |
|-----------|--|
| BCM       | Business Clearance Memorandum  |
| CPRG      | Contract Pricing Reference Guides  |
| CRB       | Contract Review Board  |
| DAU       | Defense Acquisition University   |
| DAWIA     | Defense Acquisition Workforce Improvement Act  |
| DCAA      | Defense Contract Audit Agency  |
| DFARS     | Defense Federal Acquisition Regulation Supplement  |
| DOD       | Department of Defense  |
| DODIG     | Department of Defense Inspector General  |
| DON       | Department of the Navy   |
| DPAP      | Office of the Deputy Director of Defense Procurement and Acquisition Policy for Cost, Pricing, and Finance |
| FAR       | Federal Acquisition Regulation   |
| GAO       | Government Accountability Office   |
| IGCE      | Independent Government Cost Estimate   |
| PALT      | Procurement Acquisition Lead Time  |
| PR        | Purchase Request   |
| QASA      | Quality Assurance Surveillance Assessment  |
| USD[AT&L] | Under Secretary of Defense for Acquisitions, Technology, and Logistics                                     |
| USSOCOM   | U.S. Special Operations Command  |

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## **I. INTRODUCTION**

### **A. PURPOSE**

The Federal Acquisition Streamlining Act of 1994 significantly changed government procurement practices. This act expanded the definitions of a commercial item and a non-developmental item, which in turn allowed vendors to avoid submission of certified cost and pricing data for commercial items in response to government contracting solicitations (Rumbaugh, 2010). One impact of this change is that contracting professionals must now look at market forces to establish price reasonableness for commercial item procurements. The importance of market research and price analysis methods has increased because of this change (Gera & Maddox, 2013). Since this change was made, the Department of Defense Inspector General (DODIG) has issued multiple reports that are critical of contracting officers. Contracting officers have consistently failed to adequately justify price reasonableness, or they have failed to provide documentation that explains their price reasonableness determination. The purpose of this research is to explore which price analysis techniques are being utilized and documented in the contracting file, and to explore potential improvements within Department of the Navy (DON) contracts. This project is a continuation of research that has previously been accomplished on Department of the Army contracts (Redfern, Nelson, & White, 2013).

### **B. SCOPE AND LIMITATIONS**

This project focuses on price reasonableness determinations within the DON. In this report, I review contract files at a DON contracting office that specializes in commercial supply and service procurements. In the contract file review, I assess contract documentation to include pricing memoranda, independent government cost estimates (IGCEs), and market research. With the file review, I seek to identify trends with regard to price reasonableness documentation. A personnel survey assists me in determining the ability of the contracting officers or contracting specialists to conduct proper price reasonableness determinations.

I was not able to sample the entire population of contract awards at the selected DON contracting office. Instead, I pulled a random sample of 30 contracts to provide the required data. The personnel survey was anonymous and voluntary; therefore, it is possible that not all eligible participants responded.

### **C. PROJECT ORGANIZATION**

Chapter I provides an introduction to the project. In this chapter, I identify the scope and limitations of the project, objectives of the project, and research questions to be addressed. Chapter II provides a background for price reasonableness determinations. I identify significant reports and articles. Chapter III outlines the file review and survey methodology used for data collection. In Chapter IV, I provide findings and results collected from the data. Finally, Chapter V consists of conclusions and a summary of recommendations.

### **D. OBJECTIVE AND RESEARCH QUESTIONS**

The objective of this project is to determine whether better use of price analysis techniques can improve acquisition pricing. The intent is to diagnose both strengths and weaknesses and to explore potential improvements utilizing a contract file review and a personnel survey. In this project, I address the following research questions:

- Do pricing memorandums deviate from Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) requirements?
- Do pricing memorandums document the type of price analysis used in pricing formulation?
- Do pricing memorandums refer to market research information or to IGCE information?
- If deviations in pricing memorandums exist, do they differ by the same characteristics?
- What are typical consequences of pricing memorandum inaccuracies, and why do pricing memorandums lack sufficient justifications and supporting information?

## **II. LITERATURE REVIEW**

In this chapter, I provide an overview of several reports and educational materials directed toward price reasonableness determinations. Section I focuses on the DODIG, the Government Accountability Office (GAO), and other reports specific to the subject. Section II provides an overview of previous research in this area. Section III provides a background on price reasonableness determinations and how they should be conducted. Section IV provides a conclusion to the literature review that summarizes the major findings of the reports, research, and guidance.

### **A. SECTION I: SUMMARY OF INSPECTOR GENERAL AND OTHER REPORTS**

Many government audit reports since 2001 have documented problems in determining fair and reasonable prices within the Department of Defense (DOD) and federal contracting generally. My summary indicates that many of the problems identified in government reports have occurred repeatedly, that they are consistent among many federal agencies, and stem from some of the same problems. Commercial item determinations, an overworked contracting workforce, increased requirements, lack of knowledge of market forces, and the lack of adequate pricing information are consistent themes throughout the literature (Acquisition Advisory Panel [AAP], 2007).

In 2001, a DODIG report directed toward the undersecretary of defense for acquisitions, technology, and logistics (USD[AT&L]) provided an overview of the state of price reasonableness determinations within the DOD. This report audited 145 contracts covering 18 DOD contracting agencies, including the Army, Navy, Air Force, and three defense agencies. The audit determined that, of the 145 contracting actions, 93 were for non-commercial items, and 52 were for commercial items, of which 103 were sole-source actions and 43 were competitive one-bid actions (Department of Defense, Office of the Inspector General [DODIG], 2001). The audit found that 32% of these contracting actions lacked a valid exception for obtaining certified cost or pricing data, and that 86% lacked proper price reasonableness documentation in the contracting file

(DODIG, 2001). The report further stated that contracting officers did not properly challenge commercial item designations, did not analyze price lists, and did not verify prices from prior contracts before using them as a basis for current contract pricing. The report recommended that the DOD address workload levels, require price trend analyses, and emphasize procedures for dealing with vendors who refuse to provide certified cost and pricing data (DODIG, 2001). It further recommended that agencies utilize the Defense Contract Audit Agency for assistance in price reasonableness determinations (DODIG, 2001).

In 2006, a DODIG report to the USD(AT&L) documented faulty price reasonableness determination techniques in Department of the Air Force procurements of non-competitive spare parts for weapons systems. The audit was primarily focused on an \$860 million, nine-year, strategic sourcing initiative agreement with Hamilton Sundstrand Corporation. The agency found that the Air Force negotiating team did not properly determine items as commercial. They had utilized contract pricing that had been previously determined to be not fair and reasonable to determine price reasonableness on current procurements. The auditors determined that, on average, pricing was 28% higher than previous contract prices when adjusted for inflation. The audit recommended the following: The DOD should not grant commercial item exceptions to cost or pricing data if the contractor does not have sufficient commercial sales of the item, the DOD should not use previous prices unless reasonableness of those previous prices can be established, and the DOD should not enter into strategic partnerships with contractors who are not willing to provide cost or pricing data when requested (DODIG, 2006).

In 2006, a Government Accountability Office (GAO) report to the House and Senate Armed Services Committee pointed out DOD vulnerabilities in several areas, including a capable acquisition workforce and adequate pricing (GAO, 2006). The report stated that the contracting workforce has conditions that subject it to fraud, waste, and abuse. The following influences these conditions, according to the GAO (2006):

- The overall contracting workload has increased.
- The demand for contract surveillance continues to grow because of the DOD's increasing reliance on contractors for services.

- The DOD is making greater use of alternative contracting approaches, which offer the benefits of improved efficiency and timeliness for acquiring goods and services.
- Many contracting personnel are due to retire in the next few years, taking with them a wealth of experience and capabilities. (p. 8)

The GAO (2006) report discussed DOD vulnerabilities associated with pricing, pointing out misclassification of commercial items, failure to obtain adequate pricing information, and non-competitive contracting actions that were potential causes of waste.

In 2007, the Acquisition Advisory Panel issued a report that documented the overall state of federal procurement since the acquisition reforms of the 1980s and 1990s. The adequacy of the contracting workforce is one of the areas that the panel discussed in detail. The panel noted that a qualified workforce should also have the quantitative skills required to effectively perform its duties. The demands of the workforce have grown, with a 63% increase in spending since 2001. Workforce reductions of the 1990s have contributed to an aging workforce with the most qualified people on the verge of retirement. Very few people exist in the workforce with five to 15 years' experience. The panel recommended that the government take measures to identify knowledge gaps and aggressively recruit qualified applicants to fill those gaps. The panel advised a robust recruitment process for entry-level positions with the goal of sustaining a long-term acquisition workforce. The panel further stated that when limited competition (or no competition) exists, contracting officers should have greater flexibility in requesting pricing information from offerors (AAP, 2007).

In 2009, a DODIG report to the USD(AT&L) reviewed 15 contracts issued by the U.S. Special Operations Command (USSOCOM) with a value of \$2.4 billion. The audit found that in 26% of those contracts USSOCOM did not adequately document negotiated prices, and contracts were missing all documentation establishing price reasonableness. The audit recommended that USSOCOM contracting personnel comply with FAR regulations, retain documents utilized for price reasonableness determinations in the contracting file, and review and sign memorandums prior to making awards (DODIG, 2009a).

In 2010, a DODIG report to the USD(AT&L) reviewed U.S. Army and Air Force contracts for advisory assistance services in support of search and rescue operations. The report stated that officials did not allow for a sufficient amount of time for contractors to prepare proposals. Officials also failed to complete an adequate price analysis, independent estimates, and a technical analysis. The audit recommended that the services establish reasonable solicitation response times, to document the methodology used to prepare government estimates, and to document price reasonableness determinations (DODIG, 2010).

In 2011, a DODIG report to the Naval Inspector General reviewed 14 contracts valued at \$27.5 million and found that seven contracting actions valued at \$18.9 million did not properly conduct or document price reasonableness determinations (DODIG, 2011). The report stated that contracting officers based price reasonableness determinations on incorrect calculations and unsupported IGCEs, and failed to document the contracting file (DODIG, 2011). The report further stated that when an IGCE was utilized, the contracting office requested that the surveyors adjust the IGCE when the contractor's proposed prices were significantly different from the IGCE, improving the initial IGCE, which had an average price difference of 40% to an average price difference of 10% (DODIG, 2011). The audit recommended that contracting officers conduct and document price reasonableness determinations according to the FAR, and that surveyors review the methodology for developing IGCEs and include sufficient documentation for estimates and changes (DODIG, 2011).

In 2013, a DODIG report to the Director Defense Logistics Agency reviewed 1,469 delivery orders valued at \$27.2 million and determined the contracting officers did not obtain fair and reasonable prices (DODIG, 2013). The report found that contracting officers did not review contractor purchase histories or review pricing on long-term contracts contributing to excess prices valued at \$13.7 million (DODIG, 2013). The audit recommended that contracting officers review purchase order histories and periodically review pricing on long-term sole-source contracts (DODIG, 2013).



## **B. SECTION II: SUMMARY OF PREVIOUS RESEARCH**

Previous research has been conducted on this subject outside of government audit reports. This section summarizes some of the conclusions and recommendations that have been made for price reasonableness determinations in two different reports. The previous reports looked at a small sample (90 files) of Department of the Army contract files and completed a survey of a small sample of Department of the Army contracting officers.

Redfern et al., (2013) revealed several points of interest. The price analysis conducted seemed to be dictated by the market research reports. Pricing memoranda were present in a majority of the contract files inspected (91%); however, variance was found in the amount of detail each memorandum contained. The researchers noticed the frequent use of price lists, catalogs, or advertisements as a basis for price reasonableness; however, the sample size prevented them from inferring that a larger sample size would or would not contain other justifications for price reasonableness. Competition, in this case defined as more than one quote, was found in only 20 of the files inspected. The researchers could not identify whether small business set-asides prevented the appearance of adequate competition. Market research documentation was found in 55% of the files; however, it was used as a basis for price reasonableness in only 13% of the purchases. The research noted that apparently most market research documentation in the files were provided by the end user, or customer, and did not appear to be verified by the contracting officer. This led the researchers to believe that even when the market research was used, it was not a sufficient basis to determine price reasonableness. Previous contract prices appeared to be the most utilized method for determinations. The survey responses the researchers received indicated that the workload and time constraints were the reason behind the use of previous contract prices, even if those previous prices did not contain sufficient price reasonableness determinations themselves. The survey results from supervisors also indicated that manpower shortages are considered the main reason for a lack of thoroughness in procurement actions, which is corroborated by many of the government agency audits discussed above (Redfern et al., 2013).

Gera and Maddox (2013) took an independent look at the same data utilized in the previously discussed research report. Several findings and recommendations in this report provided a sufficient understanding of the problems with price reasonableness determinations.

Gera and Maddox (2013) reported that

- prices found “reasonable on previous purchases” was the most highly utilized method of determining price reasonableness. There are several risks involved in comparing previous prices paid. One is the determination that the original price was reasonable. Second and more importantly, is that the previous price needs to be adjusted to make an apple-to-apple comparison to the offered price. (p. 47)
- analysts do not complete market research reports on a regular basis. (p. 49)
- if pricing memorandums are inaccurate, then it is possible that the price reasonableness determination has not been completed correctly. (p. 51)
- for services there appears to be less competition, so there is more dependence on previous prices and IGCEs to make price comparisons. (p. 55)

The above findings are consistent with the findings in government audit reports and do not appear to be surprising revelations.

Gera and Maddox (2013) further recommend that

- further determination if the original price was reasonable is necessary plus any adjustment for quantity/escalation to make the prices comparable. (p. 48)
- DOD should implement oversight procedures to ensure that price analysis is documented and reviewed for completeness and adequacy even for purchases less than the SAT (simplified acquisition threshold). (p. 48)
- More emphasis on the proper storage of documents, standardized electronic filing of contract pricing documents within DOD is required. (p. 60)
- DOD should put more in-depth price analysis and quantitative techniques that can be used, like indexing and regression. (pp. 62–63)

### **C. SECTION III: PRICE REASONABLENESS DETERMINATIONS**

The Federal Acquisition Regulations (FAR) set forth several policies that govern cost and pricing data in federal procurements. Several guides are available that contracting officers can utilize to properly determine price reasonableness. This section

provides a summary of those regulations that are frequently cited in audit reports and a summary of some of the guides available to contracting officers.

The FAR 15.402 (2014) Pricing Policy states that contracting officers shall purchase supplies and services from responsible sources at fair and reasonable prices; shall obtain certified cost or pricing data when required, along with data other than certified cost or pricing data as necessary to establish a fair and reasonable price; or, when certified cost or pricing data are not required, shall obtain data other than certified cost or pricing data as necessary to establish a fair and reasonable price. This policy is the basis for the requirement to obtain certified cost or pricing data.

The FAR 15.403 (2014) Prohibition on Obtaining Certified Cost or Pricing Data provides exceptions that prohibit contracting officers from obtaining the data when acquisitions fall at or below the simplified acquisition threshold, when acquisitions are based on adequate price competition, when acquisitions are based on prices set by law or regulation, when a commercial item is being acquired, when a waiver has been granted, or when modifying a contract or subcontract for commercial items.

*Contract Pricing Reference Guides* (CPRGs; 2012), issued by the Office of the Deputy Director of Defense Procurement and Acquisition Policy for Cost, Pricing, and Finance (DPAP), is a nine-volume publication that provides detailed information and techniques that contracting officers can utilize when establishing price reasonableness. *CPRG Volume 1* of the guide provides an introduction to the various pricing methods that companies utilize to generate profits and sales. Contracting officers must consider what is fair and reasonable to both the buyer (government) and the seller (company). It provides definitions for “fair” and “reasonable” in accordance with FAR mandates from both the buyer and seller perspectives. *CPRG Volume 1* (Office of the Deputy Director, 2012) identifies and explains the three techniques for establishing that a price is fair and reasonable: price analysis, cost analysis, and cost realism analysis. Price analysis is defined as “the process of examining and evaluating a proposed price to determine if it is fair and reasonable, without evaluating its separate cost elements and proposed profit. Price analysis may be, when necessary, supplemented by evaluation of cost elements” (p. 20). Price analysis requires that proposed prices be compared to some measure, and *CPRG*

*Volume 1* (Office of the Deputy Director, 2012) states specifically that prices should be compared to

- proposed prices received in response to the solicitation;
  - commercial prices including competitive published price lists, published commodity market prices, similar indexes, and discount or rebate arrangements;
  - previously proposed prices and contract prices for the same or similar end items, if both the validity of the comparison and the reasonableness of the proposed price can be established;
  - parametric estimates or estimates developed using rough yardsticks;
  - independent government estimates; or
  - prices obtained through market research for the same or similar items.
- (p. 20)

*CPRG Volume 1* (Office of the Deputy Director, 2012) also provides contracting officers with techniques for conducting market research, techniques for evaluating IGCEs, techniques for comparing prices, techniques for price-related decision with sealed bidding, and techniques for price-related decisions in negotiation.

*CPRG Volume 2* (Office of the Deputy Director, 2012) provides instructions on utilizing price indexes, cost-volume-profit analysis, statistical analysis, cost estimating relationships, regression analysis, moving averages, improvement curves, and net present value calculations. This volume defines how to use each measurement, identifies situations for effective use of the measurement, and gives examples of each that show a contracting officer a scenario for its use.

*CPRG Volume 3* (Office of the Deputy Director, 2012) explains the definitions of cost and cost analysis. It provides detail on techniques to perform cost analysis, including explanations of the different methods of accounting practices that companies utilize to charge costs. It provides techniques for evaluating direct labor costs, direct material costs, other direct costs, indirect costs, facilities costs, and profit. It provides guidance on preparing for negotiations with a prospective contractor.

*CPRG Volume 4* (Office of the Deputy Director, 2012) provides guidance for more advanced pricing problems specific to certain contract types. It provides more detail related to indirect costs, cost overruns, terminations, cost realism analysis, and economic

price adjustments.

*CPRG Volume 5* (Office of the Deputy Director, 2012) provides guidance on negotiation techniques. It discusses different types of techniques and the government's desire to achieve a win-win situation with contractors. *CPRG Volume 5* (Office of the Deputy Director, 2012) states that a win/win situation is one in which both parties

- attack the problem not each other,
- focus on long-term satisfaction and common interests,
- consider available alternatives,
- base results on objective standards whenever possible,
- focus on positive tactics to resolve differences, and
- emphasize the importance of a win-win result. (p. 8)

This volume provides more detailed guidance on preparing for a negotiation and ensuring that both the government and the contractor receive a fair price.

*CPRG Volumes 6–9* (Office of the Deputy Director, 2012) offer contracting officers' guidance for more advanced or uncommon contracting situations. *CPRG Volume 6* provides guidance on pricing contract changes and other special considerations. *CPRG Volume 7* provides techniques for settlements related to termination. *CPRG Volume 8* provides more detail on cost realism analysis. And *CPRG Volume 9* provides information on several financial indicators.

The DODIG also makes publicly available the audit framework they utilize when conducting an agency audit. This guide (DODIG, 2009b) provides detailed information on definitions, summaries of regulations, and techniques to determine whether proper cost and price reasonableness determinations were completed. The audit guidance establishes a four-step process that mirrors the FAR with respect to cost or pricing data. First, it determines whether the agency complied with the requirements for obtaining certified cost or pricing data, or other than certified data; second, it establishes whether the agency has adequate procedures in place for analysis; third, it determines whether effective analysis was conducted; and fourth, it determines whether price negotiations and documentation were effectively conducted (DODIG, 2009b).

#### **D. SECTION IV: LITERATURE REVIEW CONCLUSIONS**

There were multiple findings of deficiency in each of the inspection reports; however, there were four that repeated themselves more than others. The lack of proper price reasonableness determination documentation in the contracting file was mentioned in five separate inspection reports. The failure to properly challenge commercial item designations, and the failure to properly verify previous prices paid as fair and reasonable, were both mentioned in three different reports. The audit reports suggest that the wording of cost or pricing data regulations for commercial items has led contracting officers to hesitate to ask, or fail to ask, for certified cost and pricing data. High workload and the amount of qualified contracting personnel were mentioned in four different reports.

The previous research conducted on this topic found that documentation of price reasonableness, and the failure to verify previous prices paid, were both apparent during the review of contract files during the research. The survey utilized during the research also identified that supervisors believed that manpower shortages were a reason for the failure to properly establish and document price reasonableness. The research shows that there is consistency between the research findings and the inspection reports.

Battle (2008) summarized many of the same recommendations that government reports have made, concluding that

the factors that contribute to paying more than a fair and reasonable price for products and services can be attributed to the shortage of qualified contract personnel, the urgency of requirements by customers, and not being aware of market factors that affect prices in the commercial sector.  
(p. 67)

The above sections show that there exists enough literature in the form of audits, inspection reports, research reports, and guidebooks that provide a perspective of the problem. The existing literature provides evidence that this problem of conducting effective price reasonableness determinations will not be solved in the short term. Further research on the matter is warranted.

### **III. METHODOLOGY**

The purpose of this chapter is to describe the methods utilized in collecting the data necessary for this research. A discussion includes the contract file review methodology and the personnel survey methodology.

#### **A. CONTRACT FILE REVIEW**

I utilized a checklist for the contract file review. This checklist identified the price of each contract, commercial item designation, supply or service, estimates, competition, procedures, documentation present, and the price analysis techniques used. I reviewed 30 contract files at a DON contracting office. The parameters for file review were an acquisition price greater than \$150,000 but less than \$700,000, under two years old, and designated as commercial item procurement. I selected these parameters to provide a sample of current higher dollar value contracts that did not exceed the certified cost and pricing threshold (\$700,000). Contracts exceeding the certified cost and pricing threshold are outside the scope of this research. The DON contracting office pulled a listing of contracts that met the above parameters. There were 119 contract files identified and placed in a list. I used the Excel random number generator to randomly select a number between one and three. The number two was selected by Excel and every second contract on the listing was picked and pulled for review.

#### **B. PERSONNEL SURVEY**

I utilized a personnel survey to anonymously determine the skill level and knowledge for conducting price analysis and price reasonableness determinations. Contracting personnel possess different skills and knowledge depending on years of experience, certification level, and the types of procurements they are typically assigned. The survey was designed for the participants to assess their knowledge base and provide feedback on how often they utilize various pricing techniques. The personnel survey was limited to those contracting personnel who worked in the same office that the contracting files were reviewed in order to compare results of the personnel survey to the contract file review.

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## **IV. CONTRACT FILE REVIEW AND PERSONNEL SURVEY DATA**

### **A. CONTRACT FILE REVIEW**

This section provides the results of the data collected in the contract file review. A random sample of 30 contract files was reviewed with the parameters described in Chapter III and was the source of this data.

The contract file sample contained 30 contract files valued at \$9.4 million. They were a mix of supplies and services contracts. There were 11 contracts for the purchase of supplies valued at \$4.2 million, and 19 contracts for services valued at \$5.2 million, as shown in Table 1.

Table 1. Contract File Data-Supplies and Services

| Contract Types Reviewed in the Sample | Quantity | Percentage | Value          |
|---------------------------------------|----------|------------|----------------|
| Supplies                              | 11       | 37%        | \$4,196,201.10 |
| Services                              | 19       | 63%        | \$5,239,718.90 |
| Total                                 | 30       | 100%       | \$9,435,920.00 |

All 30 contracts (100%) in the sample were classified as commercial item contracts; seven contracts (33%) were missing a statement in the file documenting that the item met the commercial item definition.

FAR Part 13 (2014), Simplified Acquisition Procedures, was used on 53% of the sampled contracts (16 of 30). FAR Part 15 (2014), Negotiations, was used in 43% of the sampled contracts (13 of 30), and one contract (3%) utilized both FAR 13 and FAR 15. There was no use of FAR 14, Sealed Bidding, in the sample. FAR Part 15 was used most often when there was a sole-source procurement situation, or when factors other than price were applied to evaluate offers. Figure 1 shows a graphical representation of the FAR Parts utilized.

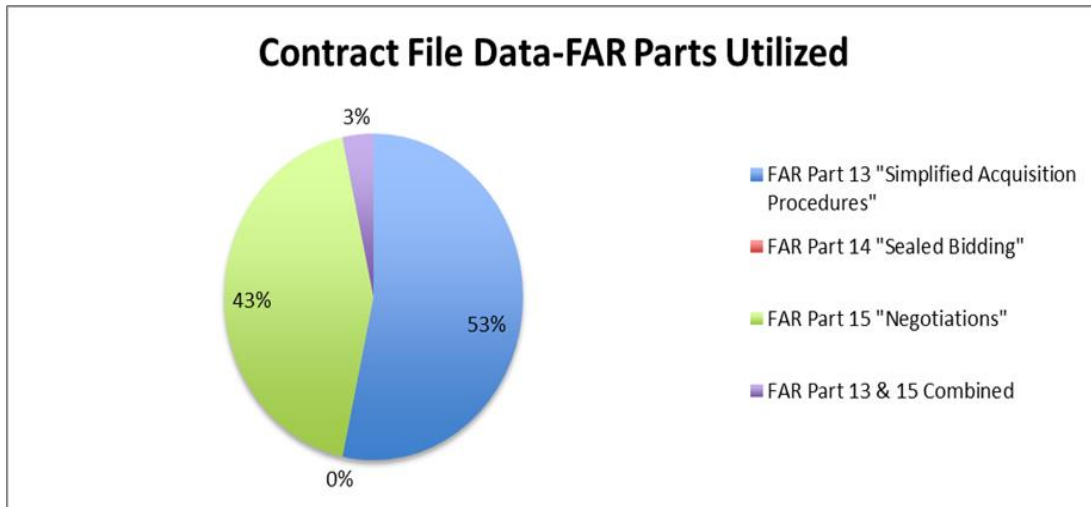


Figure 1. Contract File Data-FAR Parts Utilized

The use of an IGCE was documented in 10 of the 30 contracts sampled (33%). There were four IGCEs that were substantiated (40% of IGCEs in the sample) by catalogs, published price listings, contact with a vendor, or a government technical report. There were five service contracts with an IGCE in the file (26% of the service contracts in the sample) of which one was substantiated.

A market research report was present in 23 of the 30 sampled contracts (77%) of which 14 (47%) of those contracts addressed the type of pricing data collected, as shown in Figure 2. There were nine contracts in the sample that did not address the type of pricing data collected in the market research report, and there were seven contracts in the sample that did not have a market research report. There were 12 contracts that claimed a price comparison to prices obtained through market research of which 83% (10 contracts) had direct visible evidence in the file.

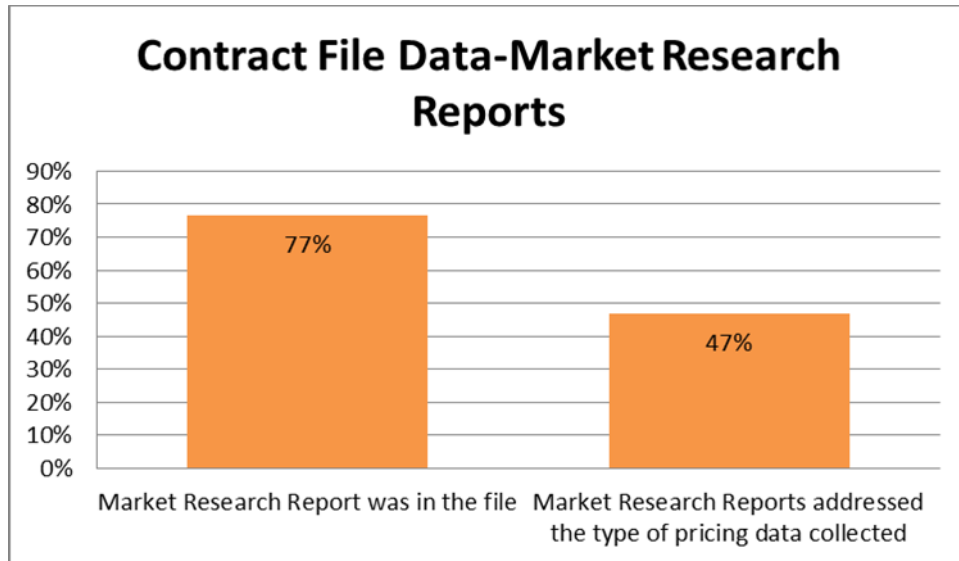


Figure 2. Contract File Data-Market Research Reports

There were eight delivery order contracts in the sample. Seven utilized estimated pricing from the base contract. On the seven delivery orders made against base contracts with estimated pricing, 100% established price reasonableness for each delivery order and did not rely on estimated prices from the base contract to base price reasonableness. An independent price reasonableness determination was conducted on each delivery order prior to award.

There were 20 contracts (67%) in the sample of 30 that utilized full and open competition as shown in Figure 3. In the 10 cases that did not utilize full and open competition, 100% had a justification and approval document in the file. The justification of “only one responsible source” was utilized 70% of the time, “unusual and compelling urgency” was utilized 20% of the time, and “authorized or required by statute” was utilized 10% of the time, as shown in Figure 4. All 10 sole-source procurements in the sample were confirmed to be commercial items. There were eight instances where there was sufficient data to determine price reasonableness. In three cases there was evidence in the file that commercial sales data from the offeror was directly utilized to support the proposed price.

There were 15 out of the 20 (75%) cases where full and open competition was used without restrictions. In 93% of the instances where unrestricted full and open

competition was utilized, price reasonableness was determined to be sufficient. In five cases where competition it was restricted, federal supply schedules were used twice. In only one case where the purchase was restricted, the use of FAR Part 8, Required Sources of Supplies and Services, was not properly utilized.

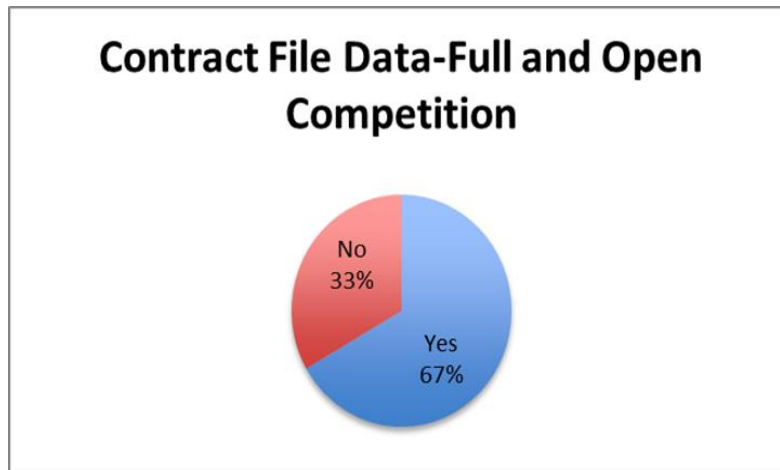


Figure 3. Contract File Data-Full and Open Competition

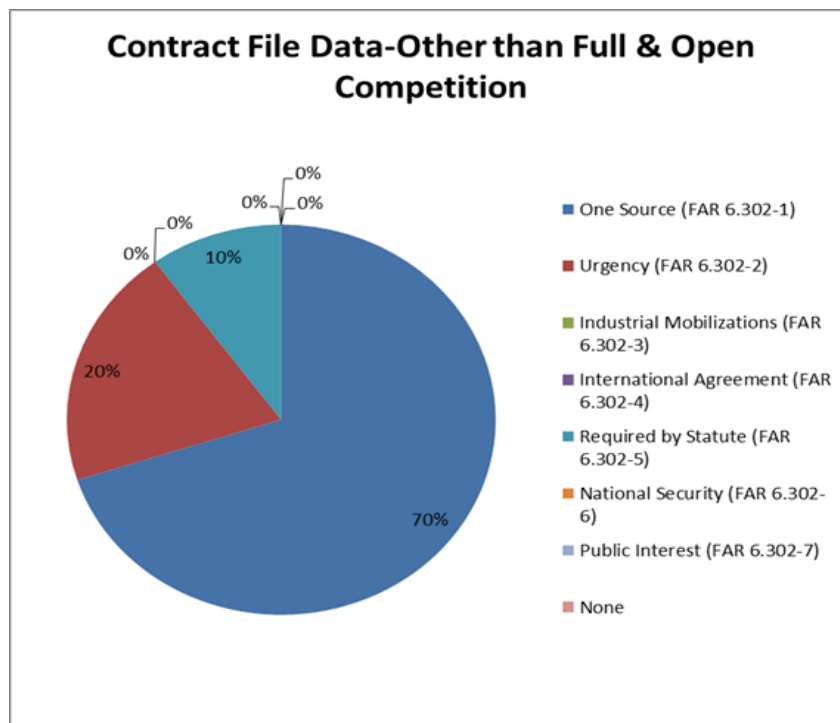


Figure 4. Contract File Data—Other than Full and Open Competition

Price was the deciding factor in 16 of the 30 (53%) sampled contracts. There were 14 instances (47%) in the sample of 30 where factors other than price were considered, but price remained a substantial factor in 13 of those cases. There were four contracts in this category that were awarded to an offeror that was not the lowest offeror; however each had a statement of price reasonableness in the file.

There were no contracts in the sample that exceeded the certified cost and pricing threshold. There were no instances of cost or price analysis or certified cost or pricing data in the sample. In two cases, the contracting officer did request and obtain data other than certified cost and pricing data; both were commercial sales data. In one case it was not clear if the vendor provided the information on request or if the contracting officer found the data on his or her own. In the other case the offeror clearly provided appropriate commercial sales data showing substantial sales at same and similar prices to the public.

Price reasonableness memorandums were present in 97% of the contracts sampled; only one file in the sample of 30 did not contain a price reasonableness memorandum. The justification for price reasonableness was documented on the pricing memorandum as required by the FAR in 26 of the 30 contracts sampled (90%). Competition (or lack of competition) was discussed in 24 of the 30 pricing memorandums in the sample (80%). Pricing memorandums indicated that one or more pricing techniques listed in FAR Part 13 were utilized 70% of the time. The number of occurrences each price analysis technique was found on pricing memorandums in the sample is displayed in Figure 5, where pricing memorandums may document one or more types of price analysis technique.

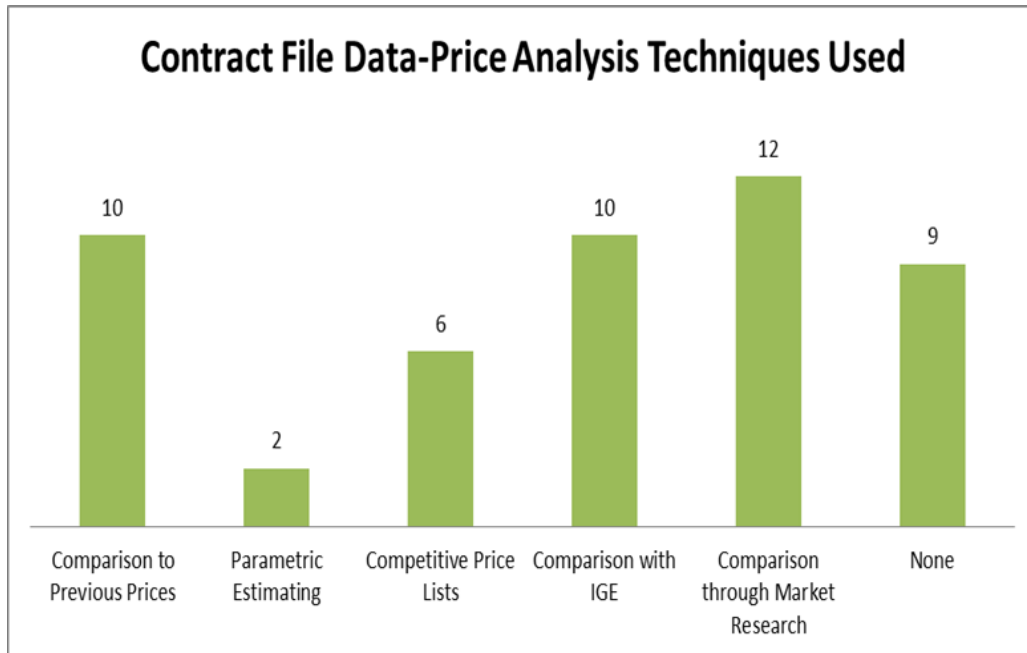


Figure 5. Contract File Data-Price Analysis Techniques Used

There were 19 contracts in the sample of 30 that documented some comparison between the current offered prices. In 11 of those 19 contracts (58%), the lowest price was smaller than 80% of the next lowest price, as displayed in Figure 6. In five cases of those 19 there was evidence that the proposed prices were not truly competitive. In all five cases, one quote was substantially higher than others, and in four cases the vendor also had past performance issues that further disqualified him or her from award consideration and should not have been used for price comparison.

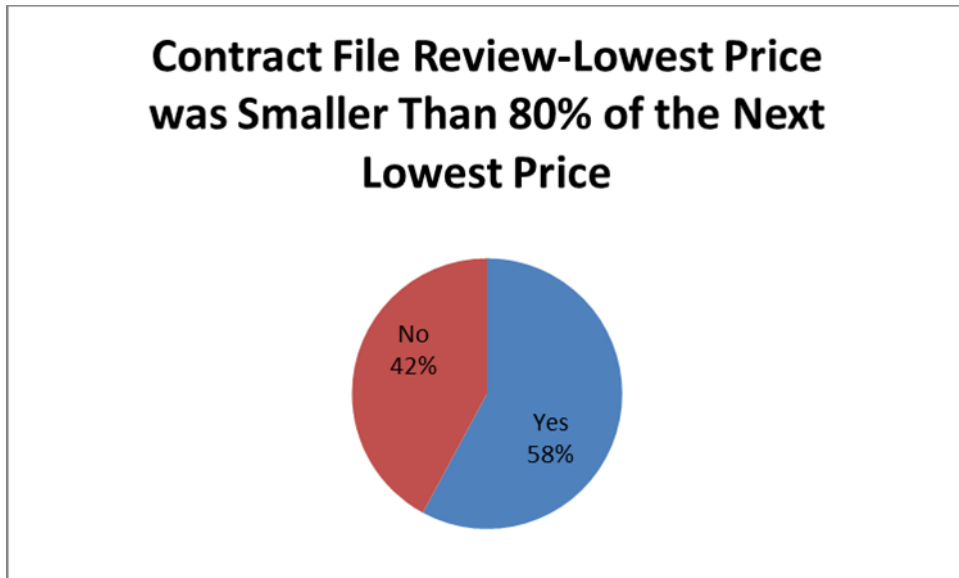


Figure 6. Contract File Review—Lowest Price Comparison to Next Lowest Price

Comparison of proposed prices to previous (historical) prices paid was utilized on 10 contracts. Of those 10 contracts, five (50%) had a valid previous price documented in the file. In four cases when a valid previous price existed, the analyst did adjust the prices from the previous price to compensate for quantity or delivery time frames appropriately, and in three of those cases the source documentation to support the adjustments was in the contract file. In the five instances that had an invalid previous price documented in the file, there was a previous price that could not be validated for one or more of the reasons displayed in Figure 7 (some had multiple disqualifying reasons). In one case of the five, the previous price had a significant time lapse between the current and previous price. In three cases of the five there were significant changes to the terms and conditions. In four cases of the five there was uncertainty with the reasonableness of the previous price. Technology changes were not a factor in disqualifying previous prices.

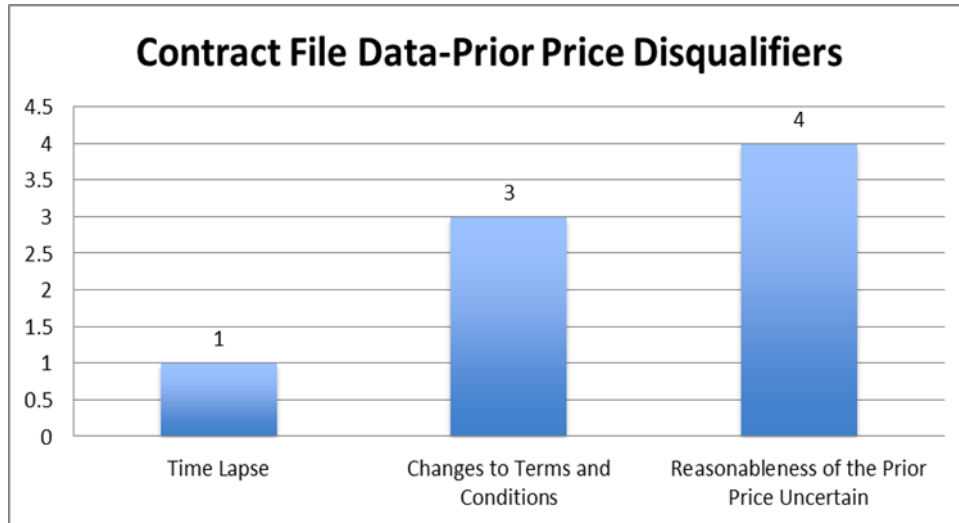


Figure 7. Contract File Data—Prior Price Disqualifiers

There were two contracts in the sample of 30 that documented some use of parametric estimating as a price analysis method to establish price reasonableness. However, only one had documentation that supported the price comparison. Neither contract had documentation supporting the reliability of the cost estimating relationship or evidence that it produced reliable results.

There were six contracts of the sample of 30 that used a comparison of proposed prices to competitive price lists. In each case (100%) the pricing memorandum included a statement of price reasonableness based on the competitive published price lists and included a reference to the listing.

There were 10 contracts of the sample of 30 that claimed a comparison of proposed prices to an IGCE. In six of those 10 cases (60%) there was documentation in the file that a price comparison was conducted against the IGCE. In each of those six cases the documentation included some statement indicating the reliability of the IGCE, of which four were substantiated by published price lists, contact with a vendor, or government technical knowledge.

There were two cases in the sample of 30 (7%) that utilized quantitative techniques in performing price analysis. They both utilized indexing to compare



previous prices to current proposed prices. There was no evidence of the use of improvement curves, cost-volume analysis, or regression analysis in the sample.

## **B. PERSONNEL SURVEY**

This section provides the results of the data collected in the personnel survey. The survey was designed for the participants to assess their knowledge base and provide feedback on how often they apply various pricing techniques.

There were 25 surveys completed out of a possible 50 personnel who met the qualifications described in Chapter III. One survey respondent completed the demographic information only, and 24 survey respondents completed the entire survey. There were two supervisors that completed the supervisor section of the survey. The percentages and charts in the section were based off 25 survey respondents for the demographic information, and 24 respondents for the specific activity and knowledge base questions.

The 25 survey respondents who completed the demographic section of the survey indicated that 18 people (72%) had greater than five years of acquisition and contracting experience, six people (24%) had three to five years of experience, and one person (4%) had less than three years of experience. None responded that they had less than one year of experience. A graphical representation of the years of acquisition experience is shown in Figure 8.

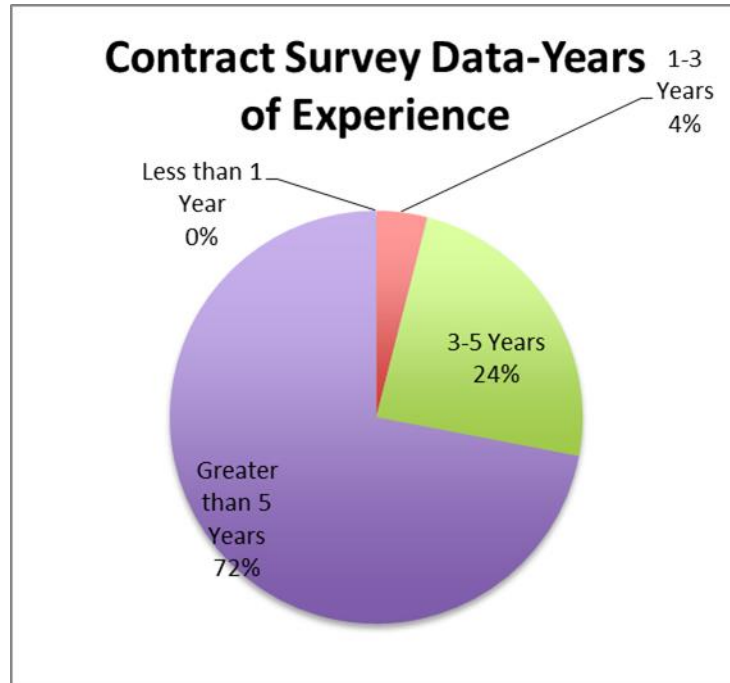


Figure 8. Contract File Data—Years of Acquisition Experience

The survey respondents were certified in Defense Acquisition Workforce Improvement Act (DAWIA) categories of contracting or purchasing as shown in Figure 9, and listed their position titles as shown in Figure 10.

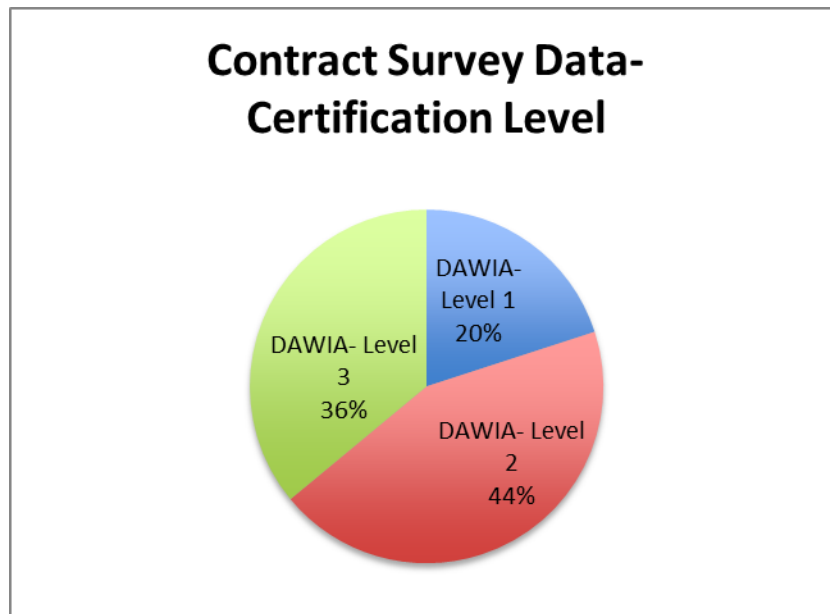


Figure 9. Contract Survey Data—Certification Level

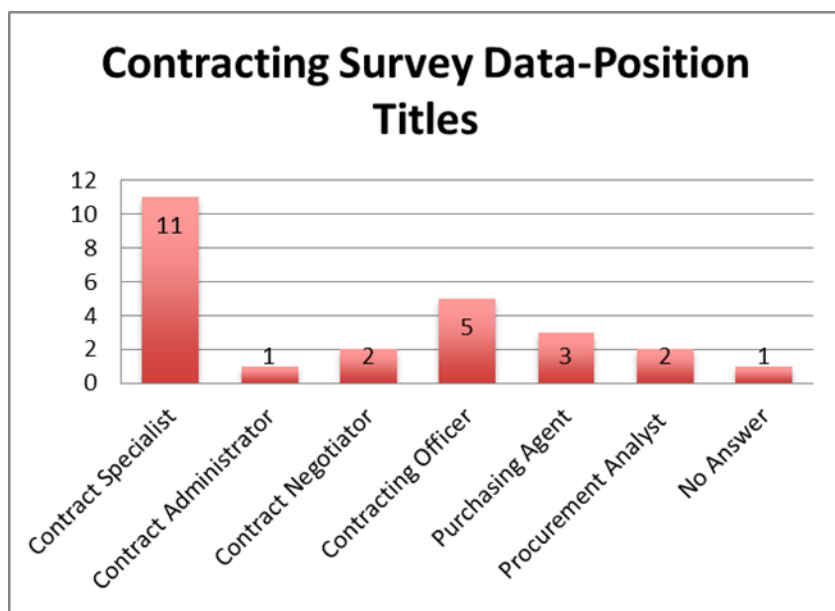


Figure 10. Contract Survey Data—Position Title

Of the 24 respondents who completed the entire survey, there were 22 respondents who purchase supplies on a daily basis, and 23 respondents who purchase services on a daily basis, and some who do both. There were 23 respondents who purchase commercial items, and 16 respondents who purchase non-commercial items, and some who do both. There were 24 respondents who manage fixed price contracts daily, 12 respondents who manage cost reimbursement contracts daily, and one respondent that manages time and materials contracts daily.

When the 24 survey respondents were asked if they completed price analysis when certified cost or pricing data was not required, 20 people (84%) responded that they conducted price analysis always or frequently, as shown in Figure 11. When contracting actions required cost analysis, 17 people (71%) responded that they also performed price analysis, and five people (21%) responded seldom or never, as shown in Figure 12.

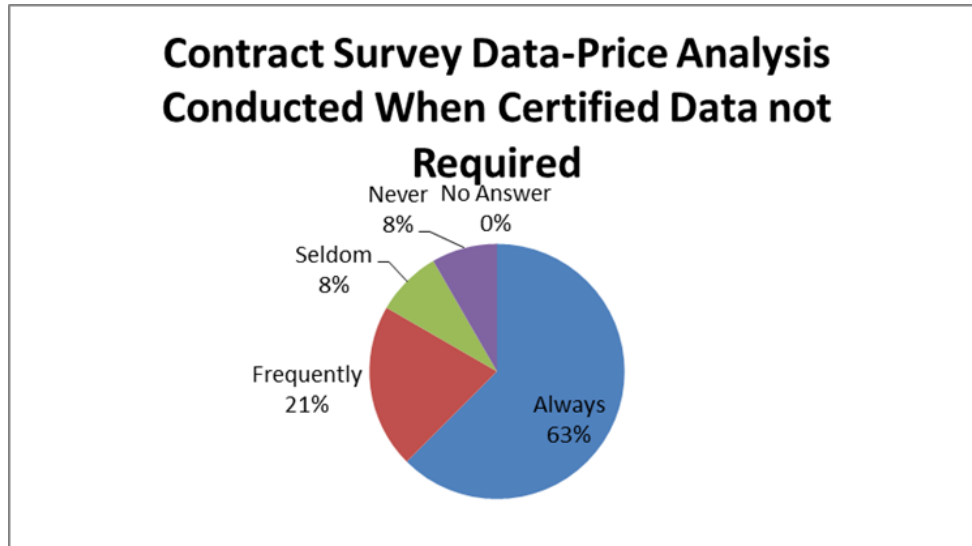


Figure 11. Contract Survey Data—Price Analysis Conducted When Certified Data Is Not Required

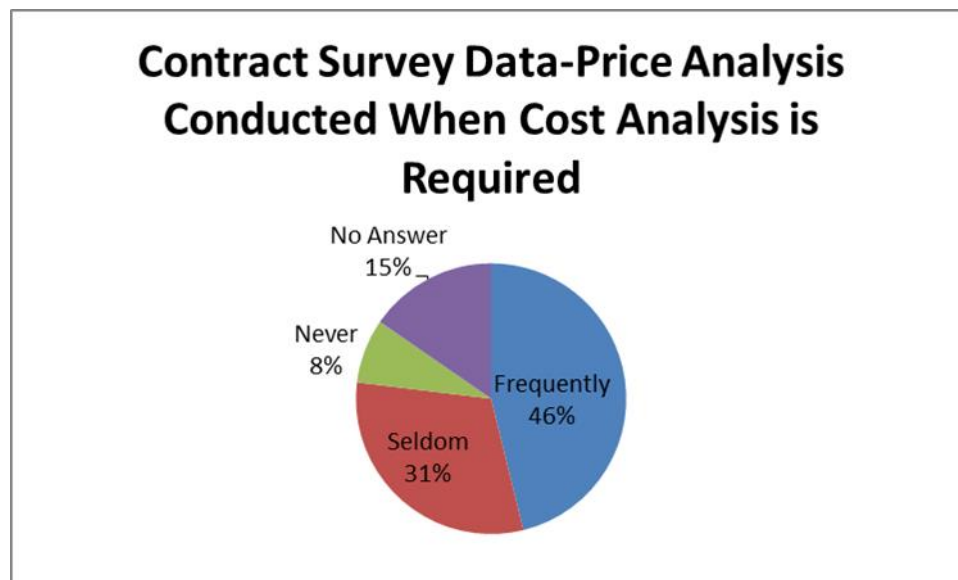


Figure 12. Contract Survey Data—Price Analysis Conducted When Cost Analysis Is Required

When the 24 survey respondents were asked if they were conducting and documenting market research prior to a new acquisition, 19 people (79%) responded that they conducted and documented market research very frequently or frequently, 18 people (75%) responded that it was very critical or critical, and 16 people (67%) responded that they had expert/advanced proficiency in conducting and documenting market research, as

shown in Figures 13–15. When asked if they identified current market pricing for the item being purchased or similar items in the market research report, 20 people (83%) answered yes.

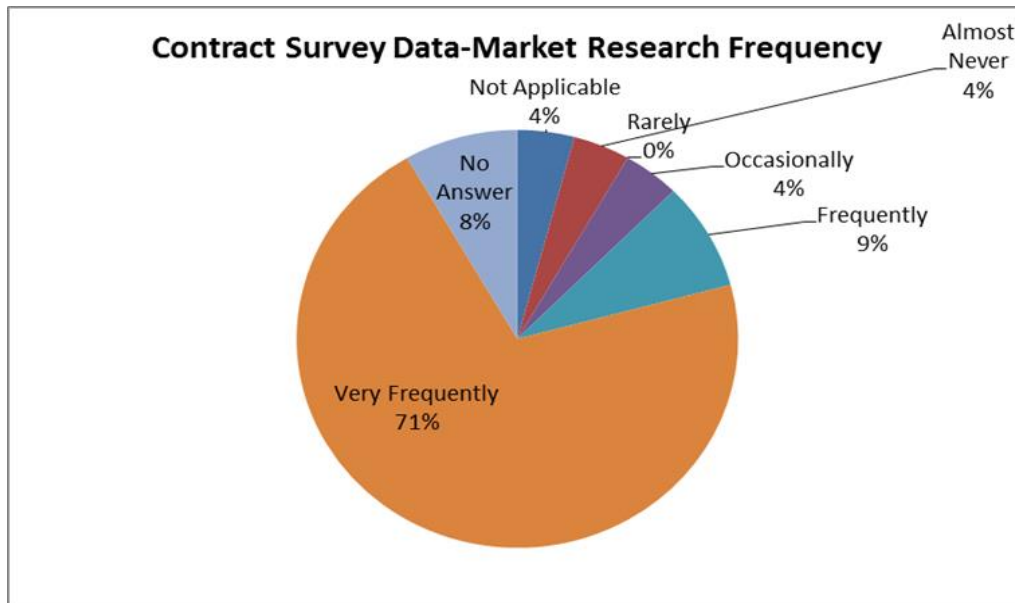


Figure 13. Contract Survey Data—Market Research Frequency

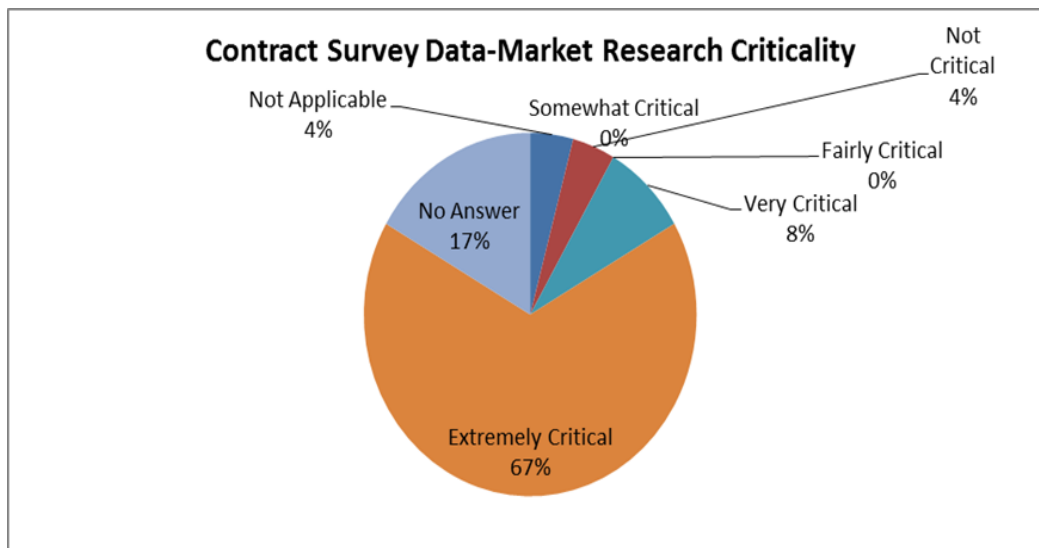


Figure 14. Contract Survey Data—Market Research Criticality

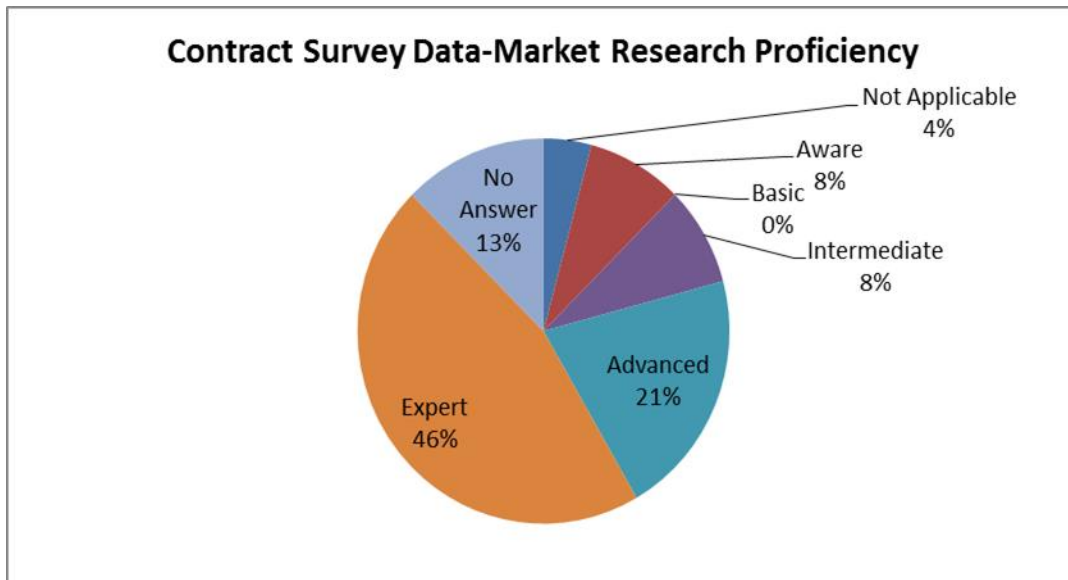


Figure 15. Contract Survey Data—Market Research Proficiency

When the 24 survey respondents were asked if the customer provided market research information, 21 people (88%) responded that both the requiring activity and the contracting activity provided market research information. When asked about the adequacy of the market research information, 13 people (54%) indicated the customer seldom provided adequate market research information, nine people (38%) indicated that the customer frequently provided adequate market research information, and 8% of the respondents indicated the customer never provided adequate market research information, as shown in Figure 16.

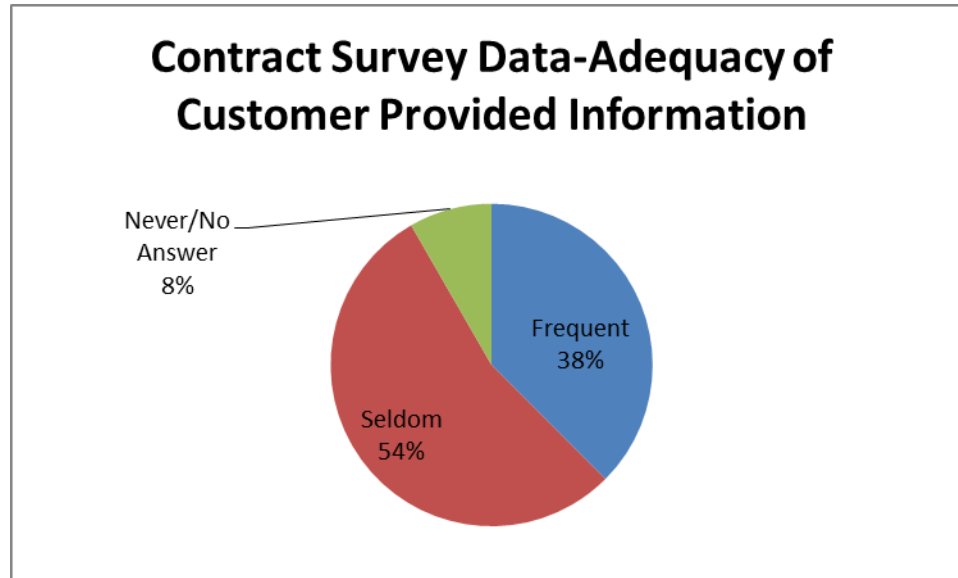


Figure 16. Contract Survey Data—Adequacy of Customer-Provided Information

When the 24 survey respondents were asked if the customer provided IGCEs, nine people (38%) responded that the customer always provided an IGCE, seven people (29%) responded that the customer frequently provided an IGCE, and 7 people (29%) responded that the customer seldom provided an IGCE. When asked if the IGCE was substantiated, 13 people (54%) thought the IGE was seldom or never substantiated, eight people (33%) thought the IGE was frequently substantiated, and three people (13%) thought the IGCE was always substantiated. When asked if they had the ability to determine if an IGCE was reliable, 16 people (67%) indicated yes, five people (21%) indicated no, and three people (12%) did not answer. When asked if it was hard to obtain adequate competition for services contracts, 16 people (67%) indicated no, six people (25%) indicated yes, and two people (8%) did not answer. When asked if an IGCE was used to determine if services were priced reasonably, 11 people (46%) indicated yes, seven people (29%) indicated no, and six people (23%) indicated it was not applicable or did not answer. IGCE response percentages are displayed in Table 2.

Table 2. Contract Survey Data-Independent Government Cost Estimates

| Contract Survey Data-Independent Government Cost Estimates (IGCE) |                         |                        |                         |   |  |   |
|---|-------------------------|------------------------|-------------------------|---|--|---|
|   | Customer provided IGCE? | IGCE is substantiated? |                         | Contracting officer has ability to determine reliability? | Hard to obtain competition for services? | IGCE used to determine if services are priced reasonably? |
| <b>Always</b>   | 38%                     | 13%                    | <b>Yes</b>              | 67%   | 25%                                      | 46%   |
| <b>Frequently</b>   | 29%                     | 33%                    | <b>No</b>               | 21%   | 67%                                      | 29%   |
| <b>Seldom/<br/>Never</b>  | 29%                     | 54%                    | <b>No<br/>Answer/NA</b> | 12%   | 8%                                       | 25%   |

When the 24 survey respondents were asked if they had requested “data other than certified cost or pricing data,” 18 people (75%) indicated yes, three people (13%) indicated no, and three people (12%) did not answer. Reasons for asking for other than certified data were no market data available (4 responses), no historical data available (6 responses), and no competition available (9 responses).

When the 24 survey respondents were asked if they executed fundamental quantitative methods (price indexing, rough yardsticks, cost-volume, regression) in determining price reasonableness: six people (25%) indicated that they execute fundamental quantitative methods frequently/very frequently, 10 people (41%) indicated they executed fundamental quantitative methods occasionally/rarely, and four people (17%) did not answer the question. When asked to rate their proficiency in executing fundamental quantitative methods, seven people (29%) indicated they were an expert/advanced in quantitative methods, eight people (33%) indicated they had intermediate/basic skills, two people (8%) indicated that they were aware of the concept, and seven people (29%) did not answer the question or thought it was not applicable.

When the 24 survey respondents were asked if they executed a pricing memorandum that explains how they determined the awarded price to be fair and reasonable, 21 people (88%) indicated that they very frequently or frequently executed a pricing memorandum, and three people (12%) did not answer the question or rarely executed a pricing memorandum. When asked if completing a pricing memorandum was critical, 19 people (79%) indicated that completing a pricing memorandum was



very/extremely critical, one person (4%) indicated that completing a pricing memorandum was fairly critical, one person (4%) indicated that completing a pricing memorandum was not critical, and three people (12%) did not answer the question or thought it was not applicable. When asked to rate their proficiency in completing a pricing memorandum, 19 people (79%) indicated that they had advanced or expert proficiency in completing pricing memorandums, two people (8%) indicated that they had basic proficiency or were aware of the concept, and three people (12%) did not answer the question or indicated it was not applicable.

When the 24 survey respondents were asked if anyone within the contracting activity reviewed the pricing memorandum before the contract was awarded, 20 people (83%) indicated that someone else did review the pricing memoranda before a contract was awarded very frequently, two people (8%) indicated that the pricing memorandum was almost never reviewed before the contract award, and two people (8%) did not answer the question or indicated that it was not applicable.

When the 24 survey respondents were asked if anyone within the contracting activity reviewed the pricing memorandum after the contract was awarded, 14 people (58%) indicated yes. When asked if the organization viewed that review as critical, 21 people (88%) indicated that it was critical. When asked if an external audit team (DODIG, GAO, or other) reviewed their agencies' contract files within the last two years, 17 people (71%) indicated that yes, an external review did occur.

When the 24 survey respondents were asked if the organization provided in-house training on price analysis methods, techniques, and documentation, 20 people (83%) indicated that in-house training did occur. When asked for suggestions on improving pricing documentation within the agency, respondents made the following comments:

- “It would be a good idea to review the FAR definitions of what constitutes an acceptable fair and reasonable determination. Even though training has been conducted on this topic, this is the sort of thing that should be reviewed periodically.”
- “A peer review could definitely be useful.”
- “Customer could submit more than one quote for requested supplies or services. This would better ensure adequate funding of the request

(requisition) and better documenting of market pricing and availability. Three quotes would be best, if possible. This would not only give the customer a realistic price range, it would also alert the customer to any problems in their product description, delivery times and availability.”

- “We do in-house quality assurance surveillance assessment (QASA) reviews and provide training from the findings.”

When the 24 survey respondents were asked which Defense Acquisition University (DAU) courses they had taken, 13 people (54%) attended CON 104, 16 people (67%) attended CON 170, 13 people (54%) attended CON 217, 14 people (58%) attended CON 270, and two people (8%) attended none of the above, as displayed in Figure 17.

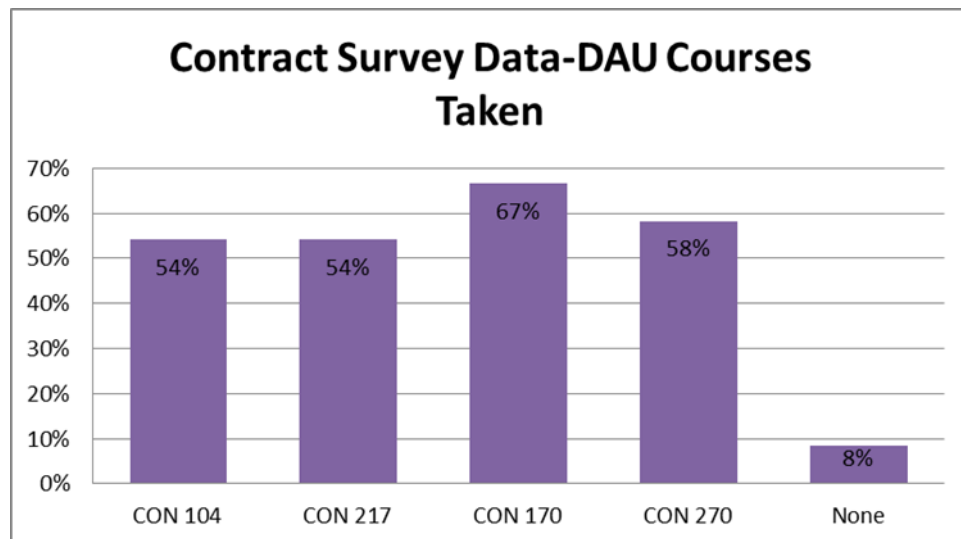


Figure 17. Contract Survey Data—DAU Courses Taken

When the 24 survey respondents were asked if those DAU courses were effective, 17 people (71%) indicated yes. When asked to make suggestions on DAU pricing courses, respondents replied with the following:

- “Having a ‘real’ contract to analyze would definitely improve the courses.”
- “More local classes throughout the year and stop cancelling due to low attendance.”
- “More on-site instruction. Not enough emphasis on sole-source/single source price analysis of commercial items. Most of the courses revolve around cost analysis—which is a small percentage of our buys. By the

time we get an acquisition that requires cost analysis we've forgotten the course material (since most of the classes are taken within our 1st 2 years of employment)."

- "I don't remember the courses."
- "Often the applicability and level of documentation is missed."

When the 24 survey respondents were asked what the challenges in executing price analysis were, four people (17%) indicated a lack of knowledge in conducting price reasonableness determinations, nine people (38%) indicated that the amount of time to complete price reasonableness determinations, four people (17%) gave other reasons as challenges, and seven people (29%) did not answer the question. The respondents who indicated other reasons gave the following inputs:

- "lack of competition and sufficient IGCE can be somewhat challenging"
- "sole-source acquisitions—finding similar products in the market to compare prices with"
- "conducting market research when the item is sole source/single source and no other vendors can provide price quote"
- "inadequate product description from the requiring activity"
- "lack of similar offerings; sole source prevents apples-to-apples price analysis with other offerings"

Those who selected "time to complete" offered the following reasons why it was the most significant challenge in executing price analysis:

- "continual redrafting/updating of purchase request (PR) documents"
- "PALT (Procurement Action Lead Time). Acquisitions valued less than \$150,000 are supposed to be completed in less than 30 days. Most of the time, the customer has submitted documentation that is inadequate (poorly written sole source, no salient characteristics for 'or equal' products, poorly written performance work statements, lack of familiarity with other comparable products or market research, and inadequate evaluation of offers). Since we deal with the fleet, contracting is typically a collateral duty so we have to train them on what makes up an adequate purchase request package—this takes time"
- "metrics"
- "the challenge is the workload and PALT times to really be able to do a sufficient job"

- “customer demands”
- “usually the urgency of the requirement”
- “amount of time it can take to get supporting documentation from the contractor or Defense Contract Audit Agency (DCAA) compared to the time available to award the contract”
- “workload”

Two survey respondents indicated that they were supervisors and answered supervisor-specific questions on the survey. When asked what their organizations biggest challenge is, one selected “skill level of employees” and one selected “manpower shortages.” When asked if their organization is actively monitoring pricing documentation for adequacy and effectiveness, one selected “outstanding” and one selected “very good.” When asked if the organization’s contracting personnel were knowledgeable in price analysis techniques, the techniques’ appropriate applications, and if personnel apply techniques appropriately, both selected “average/intermediate.” When asked if the organization’s contracting personnel have the ability to execute fundamental quantitative methods (indexing, rough yardsticks, cost-volume pricing) in performing price analysis and determining price reasonableness, one selected “below average” and one selected “average/intermediate.”

## **C. COMPARISONS**

This section makes comparisons of the file data and the personnel survey data that were directly related. Comparisons are necessary in order to relate the two data sets to each other in order to draw conclusions, and to see if the perceptions of the operators match with the reality we see in the files.

There was some discussion of competition (or lack of competition) in the pricing memorandums in 24 of the 30 (80%) contract files sampled. Pricing memorandums also indicated that one or more of the FAR 13 techniques were utilized on 21 of the 30 (70%) of the contracts sampled. When the 24 survey respondents were asked “do you execute a pricing memorandum (or something similar) in the corresponding contract file which explains how you determined the offered and awarded price (or modified price) as fair and reasonable,” 21 people (88%) answered that they frequently executed a pricing

memorandum, 19 people (79%) responded that a pricing memorandum was critical, and 19 people (79%) responded that they had advanced or expert proficiency in completing pricing memorandums. The use of quantitative techniques (price indexing) was only found twice in the sample; however a majority of survey respondents indicated that they utilized quantitative techniques when determining price reasonableness. Supervisors were split on the skill level of their employees in this matter.

There were 10 contracts in the sample of 30 that indicated that an IGCE was utilized for establishing price reasonableness; however, documentation was not found to substantiate the use of an IGCE in four of those cases. In the six cases where IGCE documentation was present and used to establish price reasonableness, there were statements questioning the reliability of the IGCE; four of those were substantiated by catalogs, contact with a vendor, or by a government technical report. When the 24 survey respondents were asked “does the customer provide an IGCE,” seven people (29%) indicated that requiring activity seldom/never provided an IGCE, seven people (29%) indicated that the requiring activity frequently provided an IGCE, and nine people (38%) indicated the customer always provided an IGCE.

When the 24 survey respondents were asked “if the customer provides an IGCE, is it substantiated,” 13 people (54%) indicated that it was seldom or never substantiated.

When the 24 survey respondents were asked about their ability to determine if an IGCE was reliable, 16 people (67%) of the respondents indicated yes. When the 24 survey respondents were asked if IGCEs were used to determine price reasonableness for services, 11 people (46%) indicated yes.

A majority of files (23 of 30) in the sample contained market research information and a majority of the contracting officers surveyed indicated that market research was frequent (18 people), critical (18 people), and that contracting officers were proficient at conducting market research (19 people). In a majority of the cases, contracting officers indicated that both the customer and the contracting officer both provided market research information; however, 13 people (54%) questioned the reliability of customer-provided information. There were 12 instances in the sample of 30 contracts where

market research was used for a price comparison. In 10 of those 12 contracts (83%), there was direct evidence in the file.

## **V. CONCLUSIONS**

### **A. SUMMARY**

The purpose of this research study was to add to previous studies in DOD price analysis on commercial item purchases. This research was conducted through the Acquisition Research Program at the Naval Postgraduate School. I designed this research study to focus on commercial item purchases within a DON contracting office that specialized in commercial item purchases for both goods and services. My goal was to answer six research questions related to pricing memorandums by conducting a file review on commercial item contracts, and by utilizing a personnel survey to determine the knowledge and skill level of the contracting professionals at conducting price analysis and price reasonableness determinations.

In Chapter I, I provided an overview of this study, the scope and limitations, and the research questions. In the literature review found in Chapter II, I discussed audit findings published by the DODIG and the GAO that document past problems with price reasonableness determinations within the DOD, summaries of previous research on this topic, and publications on price reasonableness techniques published by the DOD. In Chapter III, I presented my methodology for data collection and analysis. A random sample of 30 contract files was reviewed and a voluntary personnel survey was conducted in one DON contracting office. In Chapter IV, I presented the results and analysis from the contract file review and the personnel survey. In the remainder of this chapter, I provide the research findings, recommendations, and areas for future research.

### **B. FINDINGS/ANALYSIS/RECOMMENDATIONS**

This research investigated the following questions:

- Do pricing memorandums deviate from Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) requirements?
- Do pricing memorandums document the type of price analysis used in pricing formulation?

- Do pricing memorandums refer to market research information or IGCE information?
- If deviations in pricing memorandums exist, do they differ by the same characteristics?
- What are typical consequences of pricing memorandum inaccuracies?
- Why do pricing memorandums lack sufficient justifications and supporting information?

During the investigation of the above questions, I came to the following conclusions after collecting and then analyzing the research data from the contract file review and survey results. Following is a summary of the research findings, analysis, and recommendations for each question.

**Do pricing memorandums deviate from Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) requirements?** Overall, deviations in pricing memorandums were uncommon in the contract file sample. FAR 15.406-3(a)(11) requires that contracting officers document fair and reasonable pricing in the contract file. The contracting office providing the sample utilized a local contract review board (CRB) checklist that also served as a business clearance memorandum (BCM). This checklist was extensive, including a section on pricing, and provided a contracting officer a means to check off any pre-award administration policies, procedures, and techniques that were utilized. The use of this checklist makes it difficult for a contracting officer to fail to at least identify the type of price analysis utilized in an award decision. Expanded use of this checklist agency wide could further streamline the use and completeness of pricing memorandums, and save both reviewers and auditors time in reviews of contract files.

**Do pricing memorandums document the type of price analysis used in pricing formulation?** Some variation existed in the extent to which pricing memorandums in the sample provided detailed information on the type of price analysis used in determining price reasonableness. FAR 13.106-3 requires that contracting officers base price reasonableness on competition whenever possible, but if only one quote is received, contracting officers may base price reasonableness on market research,



previous prices paid, current price lists, comparison to similar items in a related industry, personal knowledge, comparison to IGCE, or any other reasonable basis.

Some pricing memorandums included some comparison of proposed (offered) prices when the lowest price was not smaller than 80% of the next lowest price. Proposed prices that are not within 80% of the next lowest price raise questions to the reliability of the proposed prices, and the existence of actual price competition. There were cases when a price from a technically unacceptable offeror was still used to make a price comparison. This raises the issue that although competition is present and sought, is there actual price competition? Regulations are not clear on how to handle such situations, and a price reasonableness determination clearly becomes a judgment call by the contracting officer. The contracting office providing the sample acknowledged that this very question was an issue of concern and that a policy decision is under debate for these situations. Agencies should further explore this issue for agency-wide determinations and policies to provide consistency across the agency when encountering this situation.

In some cases invalid previous (historical) prices were found because of one or more of the following reasons: time lapse, changes to terms and conditions, or uncertain reasonableness of the prior price. If invalid previous prices are utilized then price reasonableness has not actually been determined. If contracting officers are not diligent in validating previous prices prior to using them for current pricing actions, unreasonable prices can continuously perpetuate themselves into future contracting actions. Contracting officers should first validate previous prices before using them in a price reasonableness determination, and if they are not found to be valid, find another method to determine price reasonableness.

**Do pricing memorandums refer to market research information or IGCE information?** Market research does improve the buyers understanding of pricing in the marketplace. Pricing memorandums did utilize market research reports to establish price reasonableness, and a majority of the files in the sample contained market research reports. Market research is being conducted by both contracting activities and requiring activities. Redfern et al., (2013) found that contracting personnel did not always believe

that customer-provided information to be adequate; my research draws the same conclusion. Agencies should establish policy that requires the customer to provide adequate market research information and set standards for each type of purchase. This could save contracting personnel time and eliminate the need to research the customers requirement before proceeding with an acquisition.

The use of an IGCE to determine price reasonableness is infrequent and the reliability of IGCEs is not consistent. Gera and Maddox (2013) recommended that agencies increase the importance of IGCEs. The contracting office providing the sample required an IGCE on each purchase request, but the standard varied. A vendor quote would satisfy the requirement for a commercial item supply purchase, but a more substantiated IGCE was required for services or non-commercial procurements. The FAR lists an IGCE as a price analysis technique in both chapters 13 and 15, but it does not elaborate on what substantiates an IGCE. More detailed information is found in CPRG Volume 1 paragraph 6.1.5 on techniques to properly validate and use an IGCE (Office of the Deputy Director of Defense Procurement and Acquisition Policy for Cost, Pricing, and Finance, 2012). These results raise questions regarding the necessity of requiring an IGCE or using an IGCE, and whether a vendor quote should count as an IGCE.

**If deviations in pricing memorandums exist, do they differ by the same characteristics?** Pricing memorandums do differ by one consistent characteristic: the lack of supporting documentation to justify the technique utilized to establish price reasonableness. The pricing memorandum can establish that the contracting officer determined price reasonableness as well as list the technique utilized; however, substantiating documentation (calculation sheets, reference material, and methodology) is not always included. A lack of supporting documentation could be easily corrected upon discovery by local audits by returning contract files to contracting officers to have the necessary documentation printed, copied, etc., and then placed in the file. The use of electronic filing methods and hard copy paper files varies by agency. Agencies could establish policy that one or the other method will be used, but not both. This would eliminate discrepancies between what is missing in the file but might exist somewhere else in the office.

**What are typical consequences of pricing memorandum inaccuracies?**

Inaccuracies in pricing memorandums can result in increased procurement costs, sustained protests, and loss of agency contracting authority. Gera and Maddox (2013) found that other agencies do not provide much oversight for contracting actions with a value of less than \$3 million; however, this agency did have policies in place to review all contracting files no matter the value. The contracting office providing the contract file data and the survey response data undergoes a comprehensive audit every three years from a higher echelon within the agency. If significant violations of policy are found in a contracting office, that contracting office can lose contracting authority or receive significant reductions in the limits of its authority. A majority of the survey respondents indicated that an external audit had occurred within the last two years. This is not the only audit conducted; locally, the agency conducts random contract file audits on a quarterly basis to constantly improve their processes and to ensure adherence to policy. Additionally, a majority of survey respondents indicated that a review of pricing memorandums did occur before and after a contract was awarded, and that the review of pricing memorandums is considered critical. This indicates that a considerable effort is taken within this agency to reduce the consequences of pricing inaccuracies, but also procurement inaccuracies as a whole.

**Why do pricing memorandums lack sufficient justifications and supporting information?** Redfern et al., (2013) found that pricing memorandums lack justifications and supporting information because of a lack of time to complete adequate price reasonableness determinations. My research draws the same conclusion. A majority of the survey respondents who answered this question also gave specific reasons on why time was a challenge. Each comment can be linked to specific time-related measures such as procurement action lead times (PALT) or other time-consuming activities directly linked to the procurement. The survey indicates that the contracting personnel in the surveyed office were well qualified, with a majority of personnel having more than five years of experience. The survey did not ask respondents to quantify manpower shortages, but at least one supervisor did believe manpower shortages were a problem for the agency. This is consistent with the findings of several DODIG reports that found high

workloads and shortages of qualified personnel lead to the government paying more than what is fair and reasonable.

Overall, the use of pricing memorandums within this agency is common. There is some deviation to the extent that pricing memorandums document the type of price analysis used; however, price analysis techniques are being utilized. Missing documentation to support the price reasonableness determination was the biggest weakness. When competition by itself does not establish price reasonableness, the most utilized techniques for determining price reasonableness within this office were comparison through market research, comparison to previous pricing, and comparison to IGCEs. The use of indexing, regression, and parametric analysis is uncommon for commercial item purchases; however, contracting professionals in this contracting office are aware of the techniques and are trained to use them. Consistent with DODIG report findings, this contracting agency is concerned with high workloads and shortages of personnel. Survey results and comments show that contracting personnel are spending time either validating customer requirements or researching requirements on their own to validate inadequate customer provided market research information and customer-provided IGCE documentation. The contracting office that provided the contract file data and personnel survey data is concerned with pricing inaccuracies and seeks to constantly improve its adherence to policy with extensive internal reviews.

### **C. FUTURE RESEARCH**

Further research could investigate non-commercial item contracts from the same agency to determine if similar results would be found, or combine the data results across agencies to determine how the DOD performs as a whole. Also, further research into cases when the next lowest price is not within 80% of the awarded price is warranted to determine the impact and frequency of these situations. Additionally, further research could investigate the costs of contracting personnel performing market research and validating IGCEs, and establish standards for different procurement types that enable contracting professionals to focus on completing the procurement instead of validating customer-provided information.

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